

What is claimed is:

1. A needle-free jet injection device for delivering a fluid into an internal organ, the device comprising:

a rigid end effector including a plurality of orifices;

5 a fluid reservoir in fluid communication with the end effector; and

an ejection mechanism adapted to eject the fluid from the fluid reservoir through the end effector and out of the orifices with sufficient pressure to penetrate the organ while preserving functionality of the organ.

10 2. The device of claim 1, wherein the end effector includes a straight shaft section and a distal section.

15 3. The device of claim 2, wherein at least some of the orifices are located in the distal section.

4. The device of claim 3, wherein all of the orifices are located in the distal section.

20 5. The device of claim 1, wherein the ejection mechanism is further adapted to allow the device to eject multiple doses of fluid without refilling the fluid reservoir.

6. The device of claim 1, wherein the pressure with which the fluid is ejected through the orifice is sufficient to cause a transmural lesion in the organ.

7. The device of claim 6, wherein the organ is a heart.

8. The device of claim 7, wherein the fluid includes ethanol.

9. The device of claim 6, wherein the transmural lesion is sufficient to prevent electrical signals from traveling through the transmural lesion.

10. The device of claim 1, wherein length of the end effector is between four and ten inches.

11. The device of claim 1, wherein the outer diameter of the end effector is between 0.100 and 0.300 inches.

12. The device of claim 1, wherein the inner diameter of the end effector is between 0.050 and 0.275 inches.

13. The device of claim 2, wherein the length of the distal section is between 0.50 and 2.00 inches.

14. The device of claim 2, wherein the distal section lies at an angle between 30 and 90 degrees relative to the shaft.

5 15. The device of claim 2, wherein the distal section lies at a 45 degrees angle relative to the shaft.

16. The device of claim 1, wherein at least some of the orifices are arranged linearly along the length of the end effector.

10 17. The device of claim 1 wherein the orifices are arranged in multiple rows along the length of the end effector.

18. The device of claim 1 wherein the rows are offset from each other.

19. An end effector for a needle-free injection device adapted to inject a fluid into an internal organ while maintaining functionality of the organ, the end effector comprising a rigid elongate shaft including a plurality of orifices through which the fluid may be ejected.

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20. The device of claim 19, wherein the end effector includes a straight section and a distal section.

21. The device of claim 19, wherein the orifices are arranged linearly along the length of the end effector.

22. The device of claim 21, wherein at least some of the orifices are located in the distal section.

23. The device of claim 22, wherein all of the orifices are located in the distal section.

24. The device of claim 21, wherein the distal section is angled relative to the straight section.

25. The device of claim 21, wherein the distal section is curved.

26. A kit for performing needle-free injections into an internal organ while maintaining functionality of the organ, the kit including:

a needle-free jet injection device adapted to eject a fluid;

a power source for the needle-free jet injection device; and

5 an end effector including a rigid elongate shaft including a plurality of orifices, the end effector being adapted to mate with the needle-free jet injection device such that the fluid is ejected through the orifice.

27. The kit of claim 26, further including a fluid suitable for injection by the
10 needle-free injection device.

28. A method for delivering a fluid into an internal organ of a living organism,
the method comprising:

inserting a first part of a needle-free injection system having a rigid end effector
including a plurality of orifices into a living organism's body such that an internal organ
5 within the body is contacted by at least some of the orifices in the needle-free injection
system;

maintaining a second part of the needle-free injection system outside of the body;
and

injecting a fluid through the orifices and into the internal organ such that the fluid
10 penetrates the organ without destroying the functionality of the organ.

29. The method of claim 28, wherein the plurality of orifices are disposed in a
linear arrangement along the length of the rigid end effector.

30. The method of claim 28, wherein the rigid end effector includes a straight
15 shaft section and a distal section.

31. The method of claim 28, wherein the distal section is curved.

20 32. The method of claim 28, wherein the distal section is angled relative to the
straight shaft section.